

25X1

**Page Denied**

25 YEAR RE-REVIEW

SECRET

35763

SC

22 October 1947

25X1

TO : ORE

25X1

FROM : INFORMATION CONTROL, OSO

1. The attached, a report on the subject of metal research in Niederfinow, is forwarded for your information and retention. It is believed that this material may supplement U.S. studies in high temperature alloys.

2. Your reaction to the value of the attached is requested.

WAR  
NAVY  
AAF  
JRDB

25 YEAR RE-REVIEW

SECRET

SECRET

FROM : INFORMATION CONTROL, OSC  
COUNTRY : Germany  
SUBJECT : Metal Research in Niederfinow

35763

This is UNEVALUATED Information

25X1

1. Dipl. Ing. Lange, Industry Dept. ZV has made a name for himself at the Soviet Military Administration in Karlshorst as an expert on material questions and was ordered to make an inspection and appraisal of the metallurgical research institute in Niederfinow. He had the job of observing research results regarding new materials (high-heat-resisting metals) and making proposals for improvements.

2. Experiments were assigned to find a material which will not vary its properties even at highest temperatures (1000°C and more). All experiments were supposed to concern alloys which had been investigated during the war, but which were not used because of lack of important admixing materials such as wolfram and molybdenum. These alloys are to be used for the manufacture of parts for gas turbines which are exposed to high temperatures.

3. Up to date experiments to use this material for gun barrels have not been successful, since the expansion and contraction of the metal is too great. To remedy this fault, a special multiple automatic machine has been built which processes the metal at 800°C heat. This material has the advantage that a considerable reduction in weight can be achieved. A submachine gun, for instance, made of this material, weighs 1.4 kilo less than if made of steel. Through the reduction in weight, the guns can be maneuvered much more easily.

4. The metal is also used for making exhaust pipes for very heavy vehicles, such as heavy tanks and very heavy prime-movers.

5. Dipl. Ing. Gerhard Lange, former chief of Metallhütte Niederfinow, was succeeded in early September, by Dipl. Ing. Brucks. Lange returned to Central Administration for Industry.

6. The following mixture relationships were tested:

- a) 20% chromium, 22% nickel, 4% molybdenum, 1% beryllium stands up to a heat of 850°C.
- b) Chrome-nickel-steel with 18% chromium, 22% nickel, 7% molybdenum lasts to about 900 to 920°C.

25 YEAR RE-REVIEW

SECRET

- c) Materials which cannot be worked with tools, but only shaped with casting procedures, were made up of 55-65% chromium, 22-30% molybdenum and 10-17% hard iron with omission of beryllium. Heat resistance up to 1200°C.
- d) Lange proposed attempts for the improvement of this last-named material by the addition of beryllium and lime (Kalk), in order to attain greater toughness of the material. Experiments carried on during late March, including those based on the procedures proposed by Lange himself, met with no success. Elongations and distortions set in even at 900°C and upon working (Bearbeitung) fractures of the entire material occurred.
- e) Farther experiments were undertaken with the addition of vanadic acid. These tests proved to be satisfactory in some respects; the material held up without change under a temperature of 1050°C.; it could no longer be handled with present tools, however. The components were: 60% chromium, 28% molybdenum, 10% iron, 1% vanadium, 1% nickel.
- f) Experiments were also made with the following mixture: 58% chromium, 28% molybdenum, 11% iron, 2% vanadium and 1% nickel. This alloy maintained its unchanged form even at a temperature of 1200°C. The processing will be tried with so-called "Japanese special steel". In April casts were being made of the above alloy for the production of jets.

25X1

**Page Denied**